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By-Forlano, George; Abramson, Jack

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Experimental analysis of the results of an ESEA/Title I remedial reading program utilizing after-school study centers is presented. An experimental group of 1,521 New York city fourth-grade students who were enrolled in the reading program was compared with a matched control group from the same schools and a matched group from schools not having an after-school program. The final mean reading grade scores of the experimental and control groups were compared, and the t-test for correlated groups was applied to determine significant differences. After 1 school year, the experimental students as a group gained about 27 to 32 percent more reading growth than the control students who became more retarded in relation to grade placement between initial and final testing. Charts and tables are included. Program costs are estimated. (RT)

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Bernard E. Donovan, Superintendent of Schools

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J. Wayne Wrightstone, Assistant Superintendent

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MEASURING PROGRESS OF FOURTH GRADE PUPILS ENROLLED IN THE REMEDIAL PROGRAM IN READING OF THE AFTER-SCHOOL STUDY CENTERS

(Final Report)

Prepared by

George Forlano and Jack Abramson

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BUREAU OF EDUCATIONAL RESEARCH
Samuel D. McClelland, Acting Director
George Forlano, Assistant Administrative Director

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EVALUATION OF READING PROGRESS OF FOURTH GRADE PUPILS ENROLLED IN THE REMEDIAL READING PROGRAM OF THE AFTER-SCHOOL STUDY CENTERS

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Introduction

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The Purpose

The After-School Study Center Program is one of the steps taken in December 1963 by the Board of Education to compensate, as far as is possible within the operation of a school system, for the lack of maximum opportunity to learn academic skills as these are influenced by social and economic conditions. The objectives of this program are to provide remedial and other services beyond the regular school day program and to make available personnel, space, opportunity, and incentive for academic improvement. The current plan called for a remedial program in reading and mathematics, as well as for homework assistance and use of the school library on Tuesdays, Wednesdays and Thursdays of each week from 3:00 P.M. to 5:00 P.M over the period from October 1964 to May 1965.

Participants in the program have observed several indications, largely subjective in nature, which lead to the conclusion that the program is making positive contributions to the educational and emotional needs of many of the pupils involved. The Bureau of Educational Research proceeded to collect objective data concerning the effectiveness of selected aspects of the program. The area of reading was selected for study because reading activities comprise a very large part of the After-School Study Center Program and reading skills are the core of elementary education.

The Problem

Data were collected to seek answers to the following specific questions:

1. Do fourth grade pupils enrolled in the remedial reading program of the After-School Study Centers show greater gains in reading achievement over a period of a year than comparable fourth grade pupils in the same schools who had not enrolled in the After-School Study Center Program?

2. Do fourth grade pupils enrolled in the remedial reading program of the After-School Study Centers show greater gains in reading achievement over a period of a year than comparable fourth grade pupils in schools which did not have an After-School Study Center Program?

3. At different levels of reading retardation, do fourth grade pupils enrolled in the remedial reading program of the After-School Study Centers show greater gains in reading achievement over a year than do comparable fourth grade pupils in the same schools who had not enrolled in the Program?

4. At different levels of reading retardation, do fourth grade pupils enrolled in the remedial reading program of the After-School Study Centers show greater gains in reading achievement over a year than do comparable fourth grade pupils in schools which did not have an After-School Study Center Program?

5. How does the per cent of the After-School Study Center fourth grade pupils who improved one school year or more in reading compare with that of comparable fourth grade pupils not enrolled in the remedial program?

6. What is the relationship between attendance in the program and reading progress?

Design of Study

The Pupils

The experimental group was drawn from elementary schools having After-School Study Centers and consisted of 4th grade pupils enrolled in the remedial reading program as of October 1964 and had been in the same school as 3rd graders in April 1964. Since a goal of the program was to emphasize reading remediation, all experimental pupils selected were restricted to those who tested at grade placement or below. This meant that these experimental pupils achieved a reading grade equivalent of 3.7 or below as of April 1964 when the children were in the third grade. Of the original group of 167 schools 145 schools contributed experimental pupils. Fourth grade pupils were selected because initial reading test data were available as a result of the citywide reading survey conducted in April 1964.

Two types of control groups were employed. The first and much larger control consisted of pupils drawn from the same school as their counterparts. Each pair was matched on the following criteria: grade status, sex, chronological age within plus or minus three calendar months, and third grade reading comprehension grade equivalent within plus or minus 3 school months. On the basis of the above matching criteria 1,521 matched pairs were obtained from 145 schools in four boroughs where After-School Study Centers were in operation.

The second group of 427 control pupils were drawn from 20 schools which did not have After-School Study Centers. They were matched with 427 experimental pupils drawn from 22 schools on the same matching criteria used with the first group of controls. In general, a survey of the ethnic composition of the control schools revealed that the white pupil percentages were 10-15 per cent more than the white pupil percentages in the experimental schools.

The Tests Used and Data Collection

Uniform data sheets were prepared and sent to all participating schools for completion. Center supervisors requested their teachers to indicate for each pupil enrolled in her remedial reading session, the sex, age, grade and the number of days of attendance in the program from October 6, 1964 to April 15, 1965. Attendance data for the period April 15, 1964 to June 12, 1964, the last session of the program, were not available. Every experimental pupil received from 1 to 2 hours reading instruction during each afternoon session he attended. In addition the reading grade equivalent achieved by each experimental pupil on the initial Metropolitan reading test in April 1964 was to be indicated. Corresponding data for the control pupils were obtained from the test files of the Bureau of Educational Research. Pupils enrolled in special reading programs, as for example, the corrective reading program during

the regular school day were excluded. Also excluded from the study were those schools which were participating in special programs such as Community Zoning Plan and More Effective Schools Program.

All pupils included in the study were administered the Metropolitan Upper Primary Test, Form C, in April 1964 as part of the citywide third grade testing program, and the Metropolitan Upper Primary Reading Test, Form A or the Metropolitan Elementary Reading Test, Form A in April 1965 as part of the fourth grade citywide testing program.

Method of Analysis of Results

Experimental and control groups of fourth grade pupils from the same schools were drawn from all participating After-School Study Centers in four of the five boroughs. Other control groups of fourth grade pupils were drawn from 20 schools which did not have an After-School Study Center Program..Equated experimental and control groups based on third grade test results were formed for each borough and for the total group. The final mean reading grade scores of the experimental and control groups were compared and the t-test for correlated groups was applied to determine significant differences. Comparisons of sub-groups of control and experimental pupils at different levels of reading retardation were made. Comparisons of sub-groups of control and experimental pupils with different amounts of days of attendance in the program were undertaken only for the 1,521 pairs of pupils from 145 experimental schools.

Findings on Experimental and Control Pupils in Schools with After-School Study Center Programs

Comparison of Experimental and Control Groups

In April 1965, about one year after the initial third grade testing, the pupils as fourth graders were retested in reading. The grade placements of the pupils at initial and final test times were 3.7 and 4.7 respectively. The results for the total groups are given in Table 1. The experimental and control groups were equated in terms of mean and standard deviation. Both groups achieved a mean grade score of 2.30.

Table 1

Significance of the Difference in Reading Comprehension Mean Scores for 1521 Pairs of 4th Grade Experimental and Control Pupils Tested in April 1964 and April 1965

	Initial		Final		F-I Dif.	E-C Dif	E-C		
Group	Mean	SD	Mean	SD	Mean	Mean	SEM Dif.	t	P
Exp.	2.30	.53	3.28	.73	.98	.21	.02	10.50	<.01
Control	2.30	.52	3.07	.74	.77				

The total group of experimentals achieved a mean reading grade equivalent of 3.28 on the final testing in April 1965 while the controls attained a mean of 3.07. The obtained difference of .21 of a school year in favor of the experimental group was significant at less than one per cent level. As shown in Table 1, at the time of the initial testing in the third grade both experimental and control groups attained the same grade level of 2.30, that is, about 14 school months below grade placement (3.7 - 2.3). At the fourth grade the total experimental group remained about 14 months below grade placement of 4.7 (4.70 - 3.28) whereas the control group was 16 months below grade placement (4.70 - 3.07). Thus the experimental group maintained their growth over the period studied while the control group became more retarded in reading in relation to grade placement at time of test. The results by borough followed the pattern found for the total groups.

Comparisons of Experimental and Control Groups at Different Reading Levels

The next objective of the study was to determine whether the superiority of the experimental pupils prevailed at different levels of reading retardation. As a first step the 1,521 pairs were classified into three categories, namely, pupils whose initial reading grade scores were 1.7 or below grade placement (2 or more years below), those between 1.8 and 2.7 (1 to 1.9 years below) and those between 2.8 and 3.7 (0 to .9 of a year below) when tested in the third grade.

An analysis of the fourth grade test results for the pairs of experimental and control pupils at each of the three reading levels is presented in Table 2.

Table 2

Significance of the Mean Differences in Final Reading Comprehension Grade Scores for Fourth Grade Equated Experimental and Control Pupils Enrolled in the Same Elementary Schools Classified According to Initial Reading Level

Group	N	Mean 1965	SD	Mean Dif.	SEM	t	P
Pupils with Initial (Third Grade) Reading Level 1.7 and Below							
Exp.	199	2.64	.47	.18	.04	4.00	<.01
Control	199	2.46	.53				
Pupils with Initial (Third Grade) Reading Level 1.8 - 2.7							
Exp.	1016	3.21	.62	.22	.02?	9.16	<.01
Control	1016	2.99	.62				
Pupils with Initial (Third Grade) Reading Level 2.8 - 3.7							
Exp.	306	3.95	.60	.18	.04	4.18	<.01
Control	306	3.77	.58				

As indicated in Table 2, at the reading level of 1.7 and below, that is, two years and more below grade placement, the two groups differed significantly on fourth grade reading scores. The experimental group achieved a score of 2.64 and the control group a score of 2.46 at final test time, a difference of .18 of a school year in favor of the experimental group. At the initial reading level of 1.8 - 2.7, one year to 19 months below grade placement, the two equated groups differed significantly on fourth grade reading scores; the difference was .22 of a school year in favor of the experimental group. At the initial reading level of 2.8 - 3.7, 0 to 9 months below grade placement, the two equated groups also differed significantly on fourth grade reading scores. At each of the three levels significant differences in favor of the experimental groups were revealed.

Comparisons of Per Cents of Experimentals and Controls Who Gained More Than One School Year

A comparison by reading level of the numbers and percentages of experimental and control fourth grade pupils who improved in reading achievement one school year or more from April 1964 to April 1965 was undertaken. It was found that at each reading level as well as for all reading levels combined a significantly higher percentage of experimental pupils as compared to control pupils improved one year or more over the period studied. With respect to the two total groups, 50.2 per cent of the 1,521 experimental pupils as compared to 35.1 per cent of the 1,521 control pupils improved in reading one school year or more over the period studied.

Relation of Attendance and Progress in Reading Among the Experimental Pupils and Their Controls From the Same Schools

At each of the three reading levels the experimentals were divided into the upper and lower groups in attendance. The upper group of experimentals, about 26 per cent, attended the center 55 days or more and the lower group, about 26 per cent, included those who attended no more than 27 days during the period between the week of October 6, 1964 and the week of April 15, 1965. The number of instructional days between the latter dates was 70. Complete attendance data were not available for the period April 1964 to May, 1964. Available for analysis were 793 pairs of experimental and control pupils.

The analysis of the relationship between attendance and reading progress was undertaken at each of the three levels of retardation employing control as well as experimental pupils. For example, the upper group in attendance of those experimental pupils who initially tested at 1.7 and below grade placement was compared with their control counterparts; the experimental lower group in attendance that tested at or below 1.7 was compared to their control counterparts. The results showed that in the former comparison the mean difference between experimental and control pupils was .34 of a school year while the mean difference in the latter comparison was .17 of a school year. Results for the other two levels of reading retardation are also shown in Table 3. In general, the greatest differences between experimentals and controls were observed for the more retarded pupils who attended the center 55 days or more.

Table 3

Significance of the Mean Differences in Reading Comprehension Scores Between Fourth Grade Control Pupils and Fourth Grade Experimental Pupils with Highest (No Less Than 55 Days) and Lowest (Nor More Than 27 Days) Attendance by Reading Level at Third Grade

Group	N	April 1965 Mean	SD	Upper - Lower Mean Dif.	Upper - Lower SEM Dif.	t	P
Initial Reading Level 1.7 and below							
Upper Exp.	49	2.76	.51				
Control	49	2.42	.52	.34	.08	4.05	<.01
Lower Exp.	52	2.54	.44				
Control	52	2.37	.49	.17	.07	2.39	<.02
Initial Reading Level 1.8 - 2.7							
Upper Exp.	262	3.30	.66				
Control	262	2.99	.66	.31	.05	6.33	<.01
Lower Exp.	266	3.09	.62				
Control	266	2.91	.61	.18	.04	4.19	<.01
Initial Reading Level 2.8 - 3.7							
Upper Exp.	85	3.94	.51				
Control	85	3.76	.57	.18	.08	2.17	<.05
Lower Exp.	79	4.09	.68				
Control	79	3.79	.42	.30	.09	3.37	<.01
All Reading Level Groups Combined							
Upper Exp.	396	3.37	.70				
Control	396	3.09	.72	.28	.05	6.22	<.01
Lower Exp.	397	3.22	.76				
Control	397	3.00	.72	.20	.04	5.00	<.01

For the total upper attendance group of 396 experimental pupils the mean gain over 396 control pupils was .28 of a school year; for the total lower attendance group of 397 experimental pupils the mean gain over their 397 control counterparts was .20 of a school year. All the differences were statistically significant. In other words, on the average the experimental group with high attendance gained about 3 school months (.28 of a school year) over their controls as compared to the gain of 2 school months that the experimental group with lower attendance showed over their controls.

Findings on Experimental Pupils and Those Control Pupils in Schools Without the After-School Study Center Programs

In the first part of the study the participating experimental and control pupils were drawn from the same schools in order to control in part for school and related differences. A question may be raised, however, to the latter procedure of selecting pupil samples. Some may contend that the experimental pupils who elected to enroll in the program may be more motivated to learn than the control pupils and thus possibly achieve more in reading. In other words, the experimental pupils' motivation factor alone might account for the difference in reading acnievement that was found in the first part of the study.

To test this hypothesis regarding the effect of the pupil self-selective factor a replication of this experiment was conducted on smaller pupil samples. The replication involved 427 control pupils drawn from 20 schools which did not have after-school study centers during the period of study. The control schools enrolled pupils with slightly higher percentages of white pupils than in the experimental schools. Each of the pupils in the control schools was equated with an experimental pupil who was enrolled in a school with a center on sex, grade and reading comprehension grade score within plus or minus 3 school months (as of April 1964).

Comparisons of Experimental and Control Pupil Groups Drawn from Different Schools

As in the first part of this study all pupils were given different forms of the Metropolitan Reading Tests in April 1964 when they were in the third grade and one year later in April 1965 when they were in the fourth grade. Table 4 presents the initial and final mean reading grade scores of the total experimental and control pupils. The two groups were equal at initial test time in terms of the mean and standard deviation, both groups obtained an initial mean of 2.44.

Table 4

Significance of Mean Differences in Reading Comprehension Mean Scores for 427 Equated Experimental and Control 4th Grade Pupils

	Initial		Final		F-I Dif.	E-C Dif.	E-C		
Group	Mean	SD	Mean	SD	Mean	Mean	SEM Dif.	t	P
Exp.	2.44	.53	3.48	.68	1.04	.25	.04	6.25	<.01
Control	2.44	.54	3.23	.76	.79				

The total group of experimentals achieved a mean reading grade equivalent of 3.48 while the controls attained a mean of 3.23 The obtained differences of .25 of a school year in favor of the experimental group was significant at less than one per cent level. At the time of the initial testing in the third grade both experimental and control groups attained the same grade level of 2.44, that is, about 1.3 (3.70 - 3.44) school years below grade placement. At the fourth grade the experimental group was about 1.2 (4.70 - 3.48) school years below grade placement of 4.7 whereas the control group was 1.5 (4.70 - 3.23) school years below grade placement. Thus the experimental group grew more in reading in relation to grade placement than the control group over the period studied. Over the period of one school year these experimental pupils gained 1.04 school year as compared to a gain of .79 school year for the control pupils.

Comparisons of Experimental and Control Groups at Different Initial Reading Levels

Table 4 gives the reading achievement results of the two groups by initial reading level. At each reading level the experimental and control groups were found to be equated on mean initial reading grade score.

Table 5
Significance of the Mean Differences in Reading Comprehension Mean Scores for Fourth Grade Equated Experimental and Control Pupils by Initial Reading Level

		Initial		Final		F-I Dif.	E-C Dif.	E-C		
Group	N	Mean	SD	Mean	SD	Mean	Mean	SEM Dif.	t	P
				Initial Reading Level 1.7 and below						
Exp.	42	1.54	.23	2.72	.50	1.18	.24	.11	2.18	<.05
Control	42	1.55	.28	2.48	.58	.93				
				Initial Reading Level 1.8 - 2.7						
Exp.	265	2.28	.25	3.34	.57	1.06	.24	.05	4.80	<.01
Contol	265	2.28	.34	3.10	.64	.82				
				Initial Reading Level 2.8 - 3.7						
Exp.	120	3.10	.30	4.04	.63	.94	.25	.07	3.57	<.01
Control	120	3.12	.34	3.79	.66	.67				

As indicated in Table 5, at the initial reading level of 1.7 and below, that is, two years and more below grade placement, the two groups differed significantly on fourth grade reading scores. The experimental group achieved a grade score of 2.72 and the control group a grade score of 2.48 at final test time, a difference of .24 of a school year in favor of the experimental group. At initial test time the experimental and control groups were respectively 2.2 (3.7 -1.5) and 2.1 (3.7 - 1.6) school years below grade placement. At final test time this experimental group was 2.0 school years below grade placement and the corresponding control group. was 2.2 school year below grade placement. This experimental group, therefore, was less retarded with respect to grade placement at final test time than at initial test time; the reverse held true for the control counterparts.

At the other two initial reading levels the mean grade score differences were also in favor of the experimental groups. For example, the mean grade score differences of .24 and .25 school years at initial reading levels of 1.8 to 2.7, and 2.8 to 3.7 respectively were statistically significant.

Comparison of Per Cents of Experimental and Control 4th Grade Pupils Who Gained One School Year and More in Reading Achievement

Table 6 presents a comparison by all reading levels combined of the numbers and percentages of experimental and control fourth grade pupils who improved in reading achievement one school year or more.

Table 6

Significance of Differences Between Percentages of Experimental and Control Fourth Grade Pupils Who Gained One School Year or More in Reading Achievement Over the Period April 1964 - April 1965

Group	N	Per Cent	Exp. - Cont. Per Cent Diff.	SED%	t	P
All Reading Level Groups Combined (N=427)						
Exp.	234	54.8	18.3	3.35	5.46	<.01
Control	156	36.5				

With respect to the total group, 54.8 per cent of the 427 experimental pupils as compared to 36.5 per cent of the 427 control pupils improved in reading one school year or more over the period studied. This difference of 18.3 per cent in favor of the experimental pupils was statistically significant at less than the one per cent level. The per cent differences between experimentals and controls at each of the three levels ranged from 14.1 to 20.8 in favor of the former.

Program Costs

In an evaluation of an educational program it is generally desirable to include some estimate of the program costs. Program output in relation to per capita costs is an important issue to raise.

In calculating the unit cost per pupil, in an after-school study center all the necessary data were not available for the school year 1964-1965, the year during which this study was conducted. The required data, however, were available for the school year 1965-1966. During the latter school year there was an average of 25,515 pupils attending daily over a 92 day period in 258 participating day elementary schools. A total of $1,801,613 was allotted for the After-School Study Program in the day elementary schools for the year 1965-1966. Dividing the average number of pupils in daily attendance into the funds allotted to this program resulted in a unit cost per pupil for the 1965-1966 school year of $70.61. These are not actual expenses but budgeted because the 1965-1966 expenditure data have not yet been made available from the Bureau of Finance of the New York City Board of Education.

Summary, Findings and Conclusions

Summary

This study is divided into two parts. The first part of this report studied the functioning in reading comprehension of 1,521 fourth grade pupils enrolled in the remedial reading classes in after-school study centers throughout the city. These center pupils were equated on an individual basis with 1,521 control pupils who were not enrolled in an after-school study center but attended the same school as the experimental pupils. As part of the citywide reading survey, experimental and control pupils were given different forms of the Metropolitan Reading Achievement Test initially in April 1964 when they were in the third grade and finally in April 1965 when they were in the fourth grade. The test data were analyzed by borough, by levels of initial reading retardation and length of attendance in the after-school study center program. Of the 167 schools, 145 schools returned fourth grade data for analysis. The pupils were drawn from 145 schoold distributed over all boroughs except Richmond.

The second part of this study was a replication of the first part but was based on a smaller pupil sampling. The replication was undertaken to shed light on the claim that the experimental pupils who because they elected to enroll in the program were more motivated to learn than their schoolmates who did not volunteer to enroll in the reading program. Thus it was claimed that the experimental pupils would achieve more than the controls without participating in the reading program. The second phase of this study was undertaken with 427 fourth grade pupils enrolled in schools with remedial reading classes in after-school study centers and matched with 427 fourth grade pupils enrolled in control schools which did not have after-school study centers. The experimental pupils were drawn from 22 schools; the control pupils were drawn from 20 other schools. In the latter schools the percentage of white pupils ran from 10 to 15 per cent more than the white pupil percentages in the experimental schools.

Findings on Experimental and Those Control Pupils Enrolled in Same Schools

The major finds based on 1,521 equated pairs of fourth grade experimental and control pupils drawn from schools with after-school study centers are as follows:

1. Fourth grade pupils enrolled in the remedial reading program for 1 to 2 hours per day of attendance in after-school study centers show a significantly greater gain in reading achievement of approximately two school months more than comparable fourth grade pupils in the same schools who had not enrolled in the program. Over the period of one school year the experimental pupils, as a group, grew 9.8 school months as compared with a growth of 7.7 school months for comparable control pupils. In other words, on the average these experimental pupils gained about 27 per cent more than the control pupils.

2. At each of three levels of reading retardation, determined at initial test time in the third grade, fourth grade pupils enrolled in the remedial reading sessions of the after-school study center again showed significantly greater gains in reading achievement (approximately two school months) than comparable fourth grade pupils in the same school who had not enrolled in the program.

3. A significantly larger percentage (approximately 15 per cent) of the fourth grade pupils enrolled in the remedial reading sessions of the after-school study center improved one school year or more in reading when compared to fourth grade pupils within the same schools but who had not enrolled in the program.

4. Experimental pupils in the upper group in center attendance (no less than 55 days) when compared to their control counterparts showed an average gain of about 3 school months over the controls; experimental pupils in the lower group in center attendance (no more than 27 days) gained 2 school months over their control peers.

Findings on Experimental and Those Control Pupils Enrolled in Schools Without After-School Study Centers

The findings based upon 427 pairs of experimental and control pupils wherein the control member of each pair was drawn from schools without centers are as follows:

1. Fourth grade pupils enrolled in the remedial reading program of selected after-school study centers for the school year 1964-1965 made significantly greater gains in reading than did comparable fourth grade pupils attending schools but not having the after-school study center. Over the period studied these experimental pupils, as a group, grew 10.4 school months as compared with a growth of 7.9 school months for comparable control pupils. On the average the experimental pupils gained about 32 per cent more than their control peers.

2. When compared to fourth grade pupils not enrolled in the program, a significantly higher percentage (18.3 per cent) of fourth grade pupils enrolled in the remedial reading program in selected after-school study centers gained one school year or more from April 1964 to April 1965.

3. At each of three levels of reading retardation, determined at initial test time in the third grade, fourth grade pupils enrolled in the remedial reading program of the after-school study centers again showed significantly greater gains in reading achievement, approximately two and a half school months more than comparable fourth grade pupils in schools without after-school study centers.

4. In general these results corroborate those obtained on experimental and control pupils enrolled in the same schools, that is, schools with after-school study centers.

In other words, even when experimental pupils are compared with control pupils in schools with no after-school study center and who therefore did not have the opportunity to elect or reject enrollment in a center reading program the experimental pupils gained more than these controls. Even assuming that the motivational factor was present among the experimental pupils there were certain other elements of the reading program which could readily account for the experimental gain. For example, selected reading teachers were employed in most cases to give the remedial instruction in the centers, the average number of pupils per teacher, was small, 8 to 10 pupils, and a good majority of the children tended to stay in the program over the year of study.

Conclusions

In general, the effect of enrollment in the remedial program in reading on the participating fourth grade pupils showed a greater growth in reading as compared to the growth of the pupils who were not enrolled in the After-School Study Center Program. On the average the experimental pupils as a group gained about 27 to 32 per cent more than the control pupils.

Largest gains were observed for the subgroup of experimental pupils who were most retarded in reading and who attended more regularly. Regardless of initial level of reading retardation the experimentals made significant gains over the controls.

A positive relationship appeared between the amount of attendance in the instructional sessions and growth in reading achievement. When the most retarded experimental pupils who were in the upper group in attendance were compared with their control counterparts the former grew about 3.5 school months more than the latter over the period studied.

In summary, the experimental groups maintained their growth over the period studied while the control groups became more retarded in reading in relation to grade placement between initial and final test times. In general, one of the major objectives of the program - - the reading improvement of the participants - - was realized. These findings are applicable to fourth grade pupils who score at grade level or below at initial test time in the third grade. Further research at other grade levels is indicated.